FOREST MANAGEMENT NOTE

Note 56

Northwest Region

DEW-POINT TEMPERATURE TABLES FOR FIRE WEATHER STATIONS WITH VENTILATED PSYCHROMETERS

Fire weather observations are used extensively throughout Canada to calculate actual and forecasted fire danger conditions. At manually operated fire weather stations it is recommended (Turner and Lawson 1978) that weather elements such as temperature and relative humidity (RH) be measured using a ventilated psychrometer (Fig. 1). A psychrometer consists of two thermometers, one of which is an ordinary glass thermometer (the dry-bulb), while the other (the wet-bulb) has its bulb covered with a jacket of clean muslin, which is saturated with distilled water prior to an observation (Huschke 1959). When the bulbs are suitably ventilated, preferably with a motor-driven fan, they indicate the thermodynamic dry-bulb temperature and wet-bulb temperature of the atmosphere. Note that the dry-bulb temperature is identical to the temperature of the air and the wet-bulb temperature is defined as the lowest temperature to which the air can be cooled by evaporating water into it at a constant atmospheric pressure (Merrill and Alexander 1987).

Another useful fire weather measurement is the dew point (DP) or dew-point temperature. The DP is the temperature to which a given parcel of air must be cooled at constant saturation and constant water-vapor content in order for saturation to occur (Huschke 1959). The DP is always lower than the wet-bulb temperature, which in turn is always lower than the dry-bulb temperature. The only exception to this occurs when the air is saturated (i.e., when the relative humidity is 100%), in which case all three temperatures are equal. The DP is a valuable indicator of local moisture conditions. A small dew-point spread (i.e., the difference between the dry-bulb temperature and the DP) indicates that the air is nearly saturated whereas a large dew-point spread occurs when the air is relatively dry. The DP is particularly useful in fire weather forecasting operations, especially in air mass and frontal analysis, minimum temperature forecasts and, most importantly, in RH forecasts (Schroeder and Buck 1970; Countryman 1971; Atmospheric Environment Service 1987). The purpose of this note is to present tables for the calculation of DP that are specifically designed for use at manually operated fire weather stations that utilize ventilated psychrometers.

A number of computer programs (e.g., Beer 1990) have been developed to calculate DP and RH from dry-bulb and wet-bulb temperature observations using the psychrometric formula (List 1951). Both DP and RH can also be determined directly or indirectly by a variety of available instruments (Middleton and Spilhaus 1953; Fischer and Hardy 1976; Finklin and Fischer 1990); however, for some fire management agencies that operate manual observing stations within their fire weather station network, there is a requirement for a simple, non-computerized approach to determining DP and RH from dry-bulb and wet-bulb temperatures.

Tables for the calculation of RH from dry-bulb and wet-bulb temperatures using ventilated psychrometers are published in Atmospheric

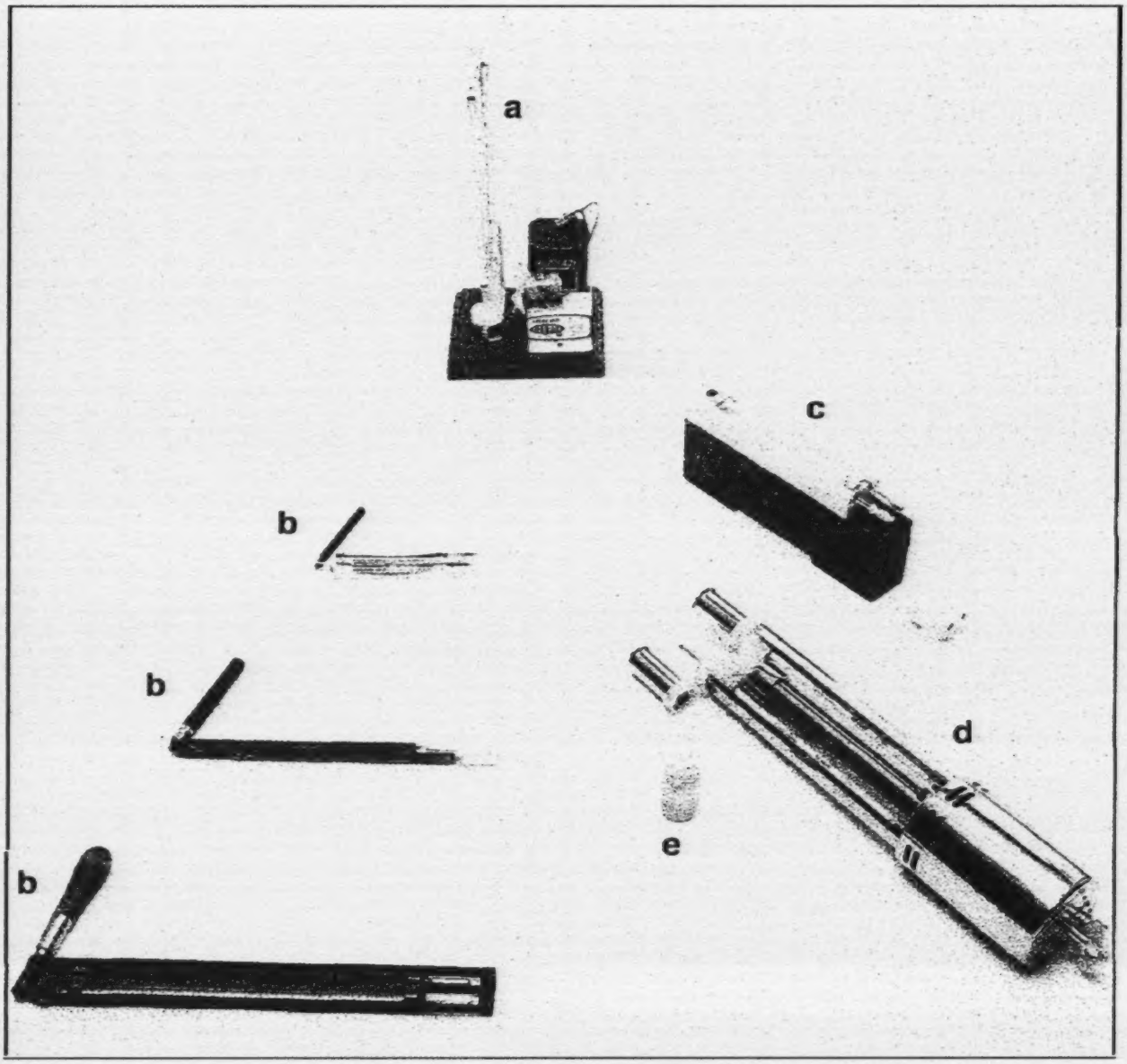

Figure 1. Ventilated psychrometers commonly used by wildland fire management agencies and research organizations in Canada: (a) nonportable electric fan psychrometer; (b) three types of sling psychrometers; (c) Bendix "Psychron" portable electric fan psychrometer; and (d) Assman psychrometer. Note that the small plastic bottle (e) would contain distilled water for wetting the wet-bulb thermometer on these ventilated psychrometers.

Environment Service (1976) and Canadian Forestry Service (1984). The Canadian Forestry Service (1984) tables were specifically designed for use at fire weather stations in Canada. These RH tables are unique because the dry-bulb and wet-bulb temperatures only need to be recorded to the nearest 0.5°C and because there is no need to compute the wet-bulb depression (i.e., the difference between the dry-bulb and wet-bulb temperatures), which is required when using the Atmospheric Environment Service (1976) tables.

The DP tables in this note (Tables 1–3) are similar in format to the RH tables published in Canadian Forestry Service (1984) and are to be applied within the following elevation ranges:

DP table	Station elevation (above mean sea level)
1	≤305 m
2	306–760 m
3	≥761 m

The DP values in Tables 1–3 were derived using a small BASIC program[1]. The procedure for calculating DP from dry-bulb and wet-bulb temperatures involved two steps. First, the environmental vapor pressures were calculated from the dry-bulb and wet-bulb temperatures using the psychrometric equation (List 1951):

$$e_w(T_d) - e_w(T_w) - Ap(T-T_w) \quad [1]$$

where:

T = dry-bulb temperature (°C),

T_w = wet-bulb temperature (°C),

T_d = dew-point temperature (°C),

e_w = saturation vapor pressure[2] in millibars (mb) over water at a given temperature,

p = pressure (mb) at a given weather station assigned according to the station's altitude,[3]

A = psychrometric constant (6.4309×10^{-4} $(°C)^{-1}$) for a ventilated psychrometer.

When the wet-bulb temperature is below 0°C, ice forms on the wick of the psychrometer creating an ice-bulb temperature requiring the DP calculation procedure to be modified. In this case, an alternate value of 5.6759×10^{-4} $(°C)^{-1}$ is used for A and the saturation vapor pressure ($e_w(T_w)$) is instead calculated over ice ($e_i(T_w)$).

The second step in the DP calculation procedure was to derive the dew-point temperature from the environmental vapor pressure by manipulating the Goff-Gratch formula and using fixed-point iteration to converge on the final value. The DP is always calculated over water and not over ice, which would actually be the frost-point temperature (Huschke 1959).

In summary, the tables presented in this note allow the calculation of the DP from observations of dry-bulb temperature and wet-bulb temperature measured using a ventilated psychrometer. The tables have been designed in a format that is consistent with other fire weather observation tables used in Canada making them readily usable at manually operated fire weather stations. The DP tables should simplify the calculation of dew-point temperature, which is used extensively by fire weather forecasters, especially for RH forecasting.

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June 1993

[1] Available from K.R. Anderson, Forestry Canada, Edmonton, Alberta.

[2] The saturation vapor pressure was calculated using the Goff-Gratch formula (List 1951).

[3] For stations at or below 305 m, a station pressure of 1010 mb was used. For stations between 306 m and 760 m, and above 760 m, station pressures of 950 mb and 880 mb were assigned, respectively.

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NOTE: The exclusion of certain manufactured products does not necessarily imply disapproval nor does the mention of other products necessarily imply endorsement by Forestry Canada.

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Cat. No. Fo29-2/56-1993E
ISBN 0-662-20718-1
ISSN 0714-1181

Table 1. Dew-point temperature table (ventilated thermometers) at <305 m elevation

Wet-bulb temperature (°C)	Dry-bulb temperature (°C)																			
	0.0	0.5	1.0	1.5	2.0	2.5	3.0	3.5	4.0	4.5	5.0	5.5	6.0	6.5	7.0	7.5	8.0	8.5	9.0	9.5
	Dew-point temperature (°C)																			
-6.0	-37																			
-5.5	-27	-32	-44																	
-5.0	-21	-24	-29	-36																
-4.5	-17	-19	-22	-26	-31	-41														
-4.0	-14	-16	-18	-20	-23	-27	-34	-49												
-3.5	-11	-13	-15	-16	-19	-21	-25	-29	-37											
3.0	-9	-11	-12	-13	-15	-17	-19	-22	-26	-31	-41									
-2.5	-7	-8	-10	-11	-12	-14	-16	-18	-20	-23	-27	-33	-47							
-2.0	-6	-7	-8	-9	-10	-11	-13	-14	-16	-18	-21	-24	-28	-35	-62					
-1.5	-4	-5	-6	-7	-8	-9	-10	-12	-13	-15	-17	-19	-22	-25	-30	-38				
-1.0	-3	-3	-4	-5	-6	-7	-8	-9	-10	-12	-13	-15	-17	-19	-22	-26	-31	-41		
-0.5	-1	-2	-3	-4	-4	-5	-6	-7	-8	-9	-11	-12	-14	-15	-17	-20	-23	-27	-32	
0.0	0	-1	-2	-2	-3	-4	-5	-6	-7	-9	-10	-12	-13	-15	-17	-20	-24	-28	-37	
0.5		0	0	-1	-2	-3	-4	-4	-5	-7	-8	-9	-10	-12	-14	-16	-18	-21	-25	-30
1.0			1	0	0	-1	-2	-3	-4	-5	-6	-7	-8	-9	-11	-13	-14	-16	-19	-22
1.5				1	1	0	-1	-1	-2	-3	-4	-5	-6	-7	-8	-10	-11	-13	-15	-17
2.0					2	1	1	0	-1	-2	-2	-3	-4	-5	-6	-7	-9	-10	-12	-13
2.5						2	2	1	1	0	-1	-2	-3	-4	-4	-5	-7	-8	-9	-10
3.0							3	2	2	1	0	0	-1	-2	-3	-4	-5	-6	-7	-8
3.5								3	3	2	2	1	0	0	-1	-2	-3	-4	-5	-6
4.0									4	3	3	2	2	1	0	-1	-1	-2	-3	-4
4.5										4	4	3	3	2	1	1	0	-1	-1	-2
5.0											5	4	4	3	3	2	1	1	0	-1
5.5												5	5	4	4	3	3	2	1	1
6.0													6	5	5	4	4	3	3	2
6.5														6	6	5	5	4	4	3
7.0															7	7	6	6	5	4
7.5																7	7	7	6	6
8.0																	8	8	7	7
8.5																		8	8	8
9.0																			9	9
9.5																				9

Example:

Temperature (°C)		Dew-point temperature (°C)
Dry-bulb	Wet-bulb	
9.5	4.0	-4
19.5	12.0	6
29.0	14.5	2

Note: During freezing weather the water on the wick must be completely frozen before a reading is attempted; ensure that ice has formed on the wick if wet-bulb temperature is below 0°C.

This table is not to be used with nonventilated psychrometers that rely on natural air movement for ventilation.

Table 1. Dew-point temperature table (ventilated thermometers) at ≤305 m elevation *continued*

Wet-bulb temperature (°C)	Dry-bulb temperature (°C)																			
	10.0	10.5	11.0	11.5	12.0	12.5	13.0	13.5	14.0	14.5	15.0	15.5	16.0	16.5	17.0	17.5	18.0	18.5	19.0	19.5
	Dew-point temperature (°C)																			
0.5	-41																			
1.0	-26	-33	-49																	
1.5	-20	-23	-28	-35																
2.0	-15	-18	-20	-24	-29	-38														
2.5	-12	-14	-16	-18	-21	-25	-30	-41												
3.0	-9	-11	-12	-14	-16	-19	-22	-26	-32	-45										
3.5	-7	-8	-10	-11	-13	-14	-17	-19	-22	-27	-33	-51								
4.0	-5	-6	-7	-8	-10	-11	-13	-15	-17	-19	-23	-27	-34	-65						
4.5	-3	-4	-5	-6	-7	-8	-10	-11	-13	-15	-17	-20	-23	-28	-35					
5.0	-2	-2	-3	-4	-5	-6	-7	-9	-10	-11	-13	-15	-17	-20	-23	-28	-36			
5.5	0	-1	-2	-2	-3	-4	-5	-6	-7	-9	-10	-12	-13	-15	-17	-20	-24	-29	-37	
6.0	1	1	0	-1	-2	-2	-3	-4	-5	-6	-7	-9	-10	-12	-13	-15	-17	-20	-24	-29
6.5	3	2	1	1	0	-1	-2	-2	-3	-4	-5	-6	-7	-9	-10	-12	-13	-15	-17	-20
7.0	4	3	3	2	1	1	0	-1	-2	-2	-3	-4	-5	-6	-7	-9	-10	-11	-13	-15
7.5	5	4	4	3	3	2	1	1	0	-1	-1	-2	-3	-4	-5	-6	-7	-9	-10	-11
8.0	6	6	5	5	4	3	3	2	2	1	0	-1	-1	-2	-3	-4	-5	-6	-7	-8
8.5	7	7	6	6	5	5	4	3	3	2	2	1	0	0	-1	-2	-3	-4	-5	-6
9.0	8	8	7	7	6	6	5	5	4	4	3	2	2	1	0	0	-1	-2	-3	-4
9.5	9	9	8	8	7	7	6	6	5	5	4	4	3	3	2	1	0	-1	-2	
10.0	10	10	9	9	8	8	7	7	6	6	5	5	4	4	3	3	2	1	1	0
10.5		10	10	10	9	9	8	8	8	7	7	6	6	5	5	4	3	3	2	2
11.0			11	11	10	10	9	9	9	8	8	7	7	6	6	5	5	4	4	3
11.5				11	11	11	10	10	10	9	9	8	8	7	7	6	6	5	5	4
12.0					12	12	11	11	11	10	10	9	9	9	8	8	7	7	6	6
12.5						12	12	12	11	11	11	10	10	10	9	9	8	8	7	7
13.0							13	13	12	12	12	11	11	11	10	10	9	9	8	8
13.5								13	13	13	13	12	12	11	11	11	10	10	10	9
14.0									14	14	13	13	13	12	12	12	11	11	11	10
14.5										14	14	14	14	13	13	13	12	12	12	11
15.0											15	15	14	14	14	13	13	13	12	12
15.5												15	15	15	15	14	14	14	13	13
16.0													16	16	15	15	15	15	14	14
16.5														16	16	16	16	15	15	15
17.0															17	16	16	16	16	16
17.5																17	17	16	16	16
18.0																	17	17	17	16
18.5																	18	18	17	17
19.0																		18	18	18
19.5																			19	19

Table 1. Dew-point temperature table (ventilated thermometers) at ≤305 m elevation *continued*

Wet-bulb temperature (°C)	Dry-bulb temperature (°C)																			
	20.0	20.5	21.0	21.5	22.0	22.5	23.0	23.5	24.0	24.5	25.0	25.5	26.0	26.5	27.0	27.5	28.0	28.5	29.0	29.5
	Dew-point temperature (°C)																			
6.0	-37																			
6.5	-24	-29	-37																	
7.0	-17	-20	-24	-28	-36															
7.5	-13	-15	-17	-20	-23	-28	-36													
8.0	-10	-11	-13	-15	-17	-20	-23	-27	-35	-71										
8.5	-7	-8	-10	-11	-13	-14	-17	-19	-22	-27	-33	-52								
9.0	-5	-6	-7	-8	-9	-11	-12	-14	-16	-19	-22	-26	-32	-45						
9.5	-3	-3	-4	-5	-7	-8	-9	-10	-12	-14	-16	-18	-21	-25	-30	-41				
10.0	-1	-2	-2	-3	-4	-5	-6	-7	-9	-10	-12	-13	-15	-17	-20	-24	-29	-37		
10.5	1	0	-1	-1	-2	-3	-4	-5	-6	-7	-8	-10	-11	-13	-15	-17	-19	-23	-27	-34
11.0	2	2	1	0	0	-1	-2	-3	-4	-5	-6	-7	-8	-9	-11	-12	-14	-16	-18	-21
11.5	4	3	3	2	1	1	0	-1	-2	-2	-3	-4	-5	-6	-7	-9	-10	-12	-13	-15
12.0	5	5	4	3	3	2	2	1	0	0	-1	-2	-3	-4	-5	-6	-7	-8	-10	-11
12.5	6	6	5	5	4	4	3	3	2	1	1	0	-1	-2	-3	-3	-4	-5	-6	-8
13.0	8	7	7	6	6	5	5	4	3	3	2	2	1	0	-1	-1	-2	-3	-4	-5
13.5	9	8	8	7	7	6	6	5	5	4	4	3	3	2	1	1	0	-1	-2	-3
14.0	10	9	9	9	8	8	7	7	6	6	5	5	4	4	3	2	2	1	0	0
14.5	11	10	10	10	9	9	8	8	7	7	7	6	6	5	4	4	3	3	2	1
15.0	12	11	11	11	10	10	9	9	9	8	8	7	7	6	6	5	5	4	4	3
15.5	13	12	12	12	11	11	11	10	10	9	9	9	8	8	7	7	6	6	5	5
16.0	14	13	13	13	12	12	12	11	11	10	10	10	9	9	8	8	8	7	7	6
16.5	14	14	14	14	13	13	13	12	12	12	11	11	10	10	10	9	9	8	8	7
17.0	15	15	15	14	14	14	14	13	13	13	12	12	11	11	11	10	10	10	9	9
17.5	16	16	16	15	15	15	14	14	14	13	13	13	12	12	12	11	11	11	10	10
18.0	17	17	16	16	16	16	15	15	15	14	14	14	13	13	13	12	12	12	11	11
18.5	18	17	17	17	17	16	16	16	16	15	15	15	14	14	14	13	13	13	12	12
19.0	19	18	18	18	18	17	17	17	16	16	16	16	15	15	15	14	14	14	14	13
19.5	19	19	19	19	18	18	18	18	17	17	17	16	16	16	16	15	15	15	14	14
20.0	20	20	20	19	19	19	19	18	18	18	18	17	17	17	17	16	16	16	15	15
20.5		20	20	20	20	20	19	19	19	19	18	18	18	18	17	17	17	17	16	16
21.0			21	21	21	20	20	20	20	19	19	19	19	19	18	18	18	17	17	17
21.5				21	21	21	21	21	20	20	20	20	20	19	19	19	19	18	18	18
22.0					22	22	22	21	21	21	21	21	20	20	20	20	19	19	19	19
22.5						22	22	22	22	22	21	21	21	21	21	20	20	20	20	20
23.0							23	23	23	22	22	22	22	22	21	21	21	21	21	20
23.5								23	23	23	23	23	23	22	22	22	22	22	21	21
24.0									24	24	24	23	23	23	23	23	22	22	22	22
24.5										24	24	24	24	24	24	23	23	23	23	23
25.0											25	25	25	24	24	24	24	24	24	23
25.5												25	25	25	25	25	25	24	24	24
26.0													26	26	26	26	25	25	25	25
26.5														26	26	26	26	26	26	26
27.0															27	27	27	27	26	26
27.5																27	27	27	27	27
28.0																	28	28	28	28
28.5																		28	28	28
29.0																			29	29
29.5																				29

Table 1. Dew-point temperature table (ventilated thermometers) at ≤305 m elevation *concluded*

Wet-bulb temperature (°C)	Dry-bulb temperature (°C)																			
	30.0	30.5	31.0	31.5	32.0	32.5	33.0	33.5	34.0	34.5	35.0	35.5	36.0	36.5	37.0	37.5	38.0	38.5	39.0	39.5
	Dew-point temperature (°C)																			
10.5	-58																			
11.0	-25	-31	-44																	
11.5	-18	-20	-24	-29	-37															
12.0	-13	-14	-17	-19	-22	-27	-33	-52												
12.5	-9	-10	-12	-14	-16	-18	-21	-24	-30	-40										
13.0	-6	-7	-8	-10	-11	-13	-15	-17	-19	-23	-27	-34	-56							
13.5	-3	-4	-5	-6	-8	-9	-10	-12	-14	-16	-18	-21	-24	-30	-39					
14.0	-1	-2	-3	-4	-5	-6	-7	-8	-9	-11	-13	-14	-17	-19	-22	-26	-33	-50		
14.5	1	0	-1	-2	-2	-3	-4	-5	-6	-7	-9	-10	-12	-13	-15	-17	-20	-24	-28	-37
15.0	2	2	1	0	0	-1	-2	-3	-4	-4	-6	-7	-8	-9	-10	-12	-14	-16	-18	-21
15.5	4	4	3	2	2	1	0	0	-1	-2	-3	-4	-5	-6	-7	-8	-9	-11	-13	-14
16.0	6	5	5	4	3	3	2	1	1	0	-1	-1	-2	-3	-4	-5	-6	-7	-8	-10
16.5	7	6	6	5	5	4	4	3	3	2	1	1	0	-1	-2	-2	-3	-4	-5	-6
17.0	8	8	7	7	6	6	5	5	4	4	3	3	2	1	1	0	-1	-2	-3	-3
17.5	10	9	9	8	8	7	7	6	6	5	5	4	4	3	3	2	1	1	0	-1
18.0	11	10	10	9	9	9	8	8	7	7	6	6	5	5	4	4	3	3	2	1
18.5	12	11	11	11	10	10	10	9	9	8	8	7	7	6	6	5	5	4	4	3
19.0	13	13	12	12	11	11	11	10	10	10	9	9	8	8	7	7	6	6	5	5
19.5	14	14	13	13	13	12	12	12	11	11	10	10	10	9	9	8	8	7	7	6
20.0	15	15	14	14	14	13	13	13	12	12	12	11	11	10	10	10	9	9	8	8
20.5	16	16	15	15	15	14	14	14	13	13	13	12	12	12	11	11	11	10	10	9
21.0	17	16	16	16	16	15	15	15	14	14	14	13	13	13	12	12	12	11	11	11
21.5	18	17	17	17	17	16	16	16	15	15	15	15	14	14	14	13	13	13	12	12
22.0	18	18	18	18	17	17	17	17	16	16	16	16	15	15	15	14	14	14	13	13
22.5	19	19	19	19	18	18	18	18	17	17	17	17	16	16	16	15	15	15	15	14
23.0	20	20	20	19	19	19	19	18	18	18	18	17	17	17	17	16	16	16	16	15
23.5	21	21	20	20	20	20	20	19	19	19	19	18	18	18	18	17	17	17	17	16
24.0	22	21	21	21	21	21	20	20	20	20	20	19	19	19	19	18	18	18	18	17
24.5	22	22	22	22	22	21	21	21	21	21	20	20	20	20	19	19	19	19	19	18
25.0	23	23	23	23	22	22	22	22	22	21	21	21	21	21	20	20	20	20	19	19
25.5	24	24	24	23	23	23	23	23	22	22	22	22	22	21	21	21	21	21	20	20
26.0	25	24	24	24	24	24	24	23	23	23	23	23	22	22	22	22	22	21	21	21
26.5	25	25	25	25	25	24	24	24	24	24	24	23	23	23	23	23	22	22	22	22
27.0	26	26	26	26	25	25	25	25	25	25	24	24	24	24	24	23	23	23	23	23
27.5	27	27	26	26	26	26	26	26	25	25	25	25	25	25	24	24	24	24	24	23
28.0	27	27	27	27	27	27	26	26	26	26	26	26	25	25	25	25	25	25	24	24
28.5	28	28	28	28	27	27	27	27	27	27	27	26	26	26	26	26	26	25	25	25
29.0	29	29	28	28	28	28	28	28	28	27	27	27	27	27	27	26	26	26	26	26
29.5	29	29	29	29	29	29	29	28	28	28	28	28	28	27	27	27	27	27	27	27
30.0	30	30	30	30	29	29	29	29	29	29	29	28	28	28	28	28	28	28	27	27
30.5		30	30	30	30	30	30	30	30	29	29	29	29	29	29	29	28	28	28	28
31.0			31	31	31	31	30	30	30	30	30	30	30	30	29	29	29	29	29	29
31.5				31	31	31	31	31	31	31	31	30	30	30	30	30	30	30	30	29
32.0					32	32	32	32	32	31	31	31	31	31	31	31	30	30	30	30
32.5						32	32	32	32	32	32	32	32	32	31	31	31	31	31	31
33.0							33	33	33	33	33	32	32	32	32	32	32	32	32	31
33.5								33	33	33	33	33	33	33	33	33	32	32	32	32
34.0									34	34	34	34	34	33	33	33	33	33	33	33
34.5										34	34	34	34	34	34	34	34	34	33	33
35.0											35	35	35	35	35	34	34	34	34	34
35.5												35	35	35	35	35	35	35	35	35
36.0													36	36	36	36	36	35	35	35
36.5														36	36	36	36	36	36	36
37.0															37	37	37	37	37	37
37.5																37	37	37	37	37
38.0																	38	38	38	38
38.5																		38	38	38
39.0																			39	39
39.5																				39

Table 2. Dew-point temperature table (ventilated thermometers) at an elevation of 306–760 m

Wet-bulb temperature (°C)	Dry-bulb temperature (°C)																		
	0.0	0.5	1.0	1.5	2.0	2.5	3.0	3.5	4.0	4.5	5.0	5.5	6.0	6.5	7.0	7.5	8.0	8.5	9.0	9.5
	Dew-point temperature (°C)																			
-6.0	-31	-40																		
-5.5	-24	-28	-34	-49																
-5.0	-19	-22	-25	-30	-38															
-4.5	-16	-18	-20	-23	-27	-32	-42													
-4.0	-13	-15	-17	-19	-21	-24	-28	-35	-51											
-3.5	-11	-12	-14	-15	-17	-19	-22	-25	-30	-37										
-3.0	-9	-10	-11	-13	-14	-16	-18	-20	-23	-26	-31	-41								
-2.5	-7	-8	-9	-10	-12	-13	-14	-16	-18	-21	-24	-27	-33	-45						
-2.0	-5	-6	-7	-8	-9	-11	-12	-13	-15	-17	-19	-21	-24	-28	-35	-52				
-1.5	-4	-5	-6	-6	-7	-8	-10	-11	-12	-14	-15	-17	-19	-22	-25	-29	-36	-77		
-1.0	-3	-3	-4	-5	-6	-7	-8	-9	-10	-11	-12	-14	-15	-17	-20	-22	-26	-30	-38	
-0.5	-1	-2	-3	-3	-4	-5	-6	-7	-8	-9	-10	-11	-12	-14	-16	-18	-20	-23	-26	-31
0.0	0	-1	-1	-2	-3	-4	-5	-6	-7	-8	-9	-11	-12	-14	-16	-18	-20	-24	-28	-35
0.5		0	0	-1	-2	-2	-3	-4	-5	-6	-7	-8	-10	-11	-12	-14	-16	-18	-21	-25
1.0			1	0	0	-1	-2	-3	-3	-4	-5	-6	-7	-9	-10	-11	-13	-15	-17	-19
1.5				1	1	0	0	-1	-2	-3	-4	-5	-6	-7	-8	-9	-10	-12	-13	-15
2.0					2	1	1	0	-1	-1	-2	-3	-4	-5	-6	-7	-8	-9	-10	-12
2.5						2	2	1	1	0	-1	-1	-2	-3	-4	-5	-6	-7	-8	-9
3.0							3	2	2	1	1	0	-1	-2	-2	-3	-4	-5	-6	-7
3.5								3	3	2	2	1	0	0	-1	-2	-2	-3	-4	-5
4.0									4	3	3	2	2	1	0	0	-1	-2	-3	-3
4.5										4	4	3	3	2	2	1	0	0	-1	-2
5.0											5	4	4	3	3	2	2	1	0	0
5.5												5	5	4	4	3	3	2	2	1
6.0													6	6	5	5	4	3	3	2
6.5														6	6	6	5	5	4	3
7.0															7	7	6	6	5	5
7.5																7	7	7	6	6
8.0																	8	8	7	7
8.5																		8	8	8
9.0																			9	9
9.5																				9

Example:

Temperature (°C)		Dew-point temperature (°C)
Dry-bulb	Wet-bulb	
9.5	4.0	-3
19.5	12.0	6
29.0	14.5	3

Note: During freezing weather the water on the wick must be completely frozen before a reading is attempted; ensure that ice has formed on the wick if wet-bulb temperature is below 0°C.

This table is not to be used with nonventilated psychrometers that rely on natural air movement for ventilation.

Table 2. Dew-point temperature table (ventilated thermometers) at an elevation of 306–760 m *continued*

Wet-bulb temperature (°C)	Dry-bulb temperature (°C)																			
	10.0	10.5	11.0	11.5	12.0	12.5	13.0	13.5	14.0	14.5	15.0	15.5	16.0	16.5	17.0	17.5	18.0	18.5	19.0	19.5
	Dew-point temperature (°C)																			
0.5	-30	-38																		
1.0	-22	-26	-31	-42																
1.5	-17	-20	-23	-27	-33	-47														
2.0	-13	-15	-17	-20	-23	-28	-34	-57												
2.5	-11	-12	-14	-16	-18	-20	-24	-28	-36											
3.0	-8	-9	-11	-12	-14	-16	-18	-21	-24	-29	-38									
3.5	-6	-7	-8	-10	-11	-12	-14	-16	-18	-21	-25	-30	-39							
4.0	-4	-5	-6	-7	-8	-10	-11	-13	-14	-16	-19	-21	-25	-30	-40					
4.5	-3	-3	-4	-5	-6	-7	-8	-10	-11	-13	-14	-16	-19	-22	-25	-31	-41			
5.0	-1	-2	-3	-3	-4	-5	-6	-7	-8	-10	-11	-13	-14	-16	-19	-22	-25	-31	-41	
5.5	0	0	-1	-2	-3	-3	-4	-5	-6	-7	-8	-10	-11	-13	-14	-16	-19	-22	-25	-31
6.0	2	1	0	0	-1	-2	-3	-3	-4	-5	-6	-7	-8	-10	-11	-13	-14	-16	-19	-22
6.5	3	2	2	1	0	0	-1	-2	-2	-3	-4	-5	-6	-7	-8	-10	-11	-13	-14	-16
7.0	4	4	3	2	2	1	1	0	-1	-2	-2	-3	-4	-5	-6	-7	-8	-9	-11	-12
7.5	5	5	4	4	3	2	2	1	1	0	-1	-1	-2	-3	-4	-5	-6	-7	-8	-9
8.0	6	6	5	5	4	4	3	3	2	1	1	0	-1	-1	-2	-3	-4	-5	-6	-7
8.5	7	7	6	6	5	5	4	4	3	3	2	2	1	0	0	-1	-2	-3	-4	-5
9.0	8	8	7	7	6	6	6	5	4	4	3	3	2	2	1	0	0	-1	-2	-3
9.5	9	9	8	8	7	7	7	6	6	5	5	4	4	3	2	2	1	1	0	-1
10.0	10	10	9	9	8	8	8	7	7	6	6	5	5	4	4	3	3	2	1	1
10.5		10	10	10	9	9	9	8	8	7	7	6	6	5	5	4	4	3	3	2
11.0			11	11	10	10	10	9	9	8	8	8	7	7	6	6	5	5	4	4
11.5				11	11	11	10	10	10	9	9	9	8	8	7	7	6	6	5	5
12.0					12	12	11	11	11	10	10	10	9	9	8	8	7	7	7	6
12.5						12	12	12	12	11	11	10	10	10	9	9	9	8	8	7
13.0							13	13	12	12	12	11	11	11	10	10	10	9	9	8
13.5								13	13	13	13	12	12	12	11	11	11	10	10	9
14.0									14	14	13	13	13	12	12	12	11	11	11	10
14.5										14	14	14	14	13	13	13	12	12	12	11
15.0											15	15	14	14	14	14	13	13	13	12
15.5												15	15	15	15	14	14	14	13	13
16.0													16	16	15	15	15	15	14	14
16.5														16	16	16	16	15	15	15
17.0															17	17	16	16	16	16
17.5																17	17	17	17	17
18.0																	18	18	18	17
18.5																		18	18	18
19.0																			19	19
19.5																				19

Table 2. Dew-point temperature table (ventilated thermometers) at an elevation of 306–760 m *continued*

Wet-bulb temperature (°C)	Dry-bulb temperature (°C)																			
	20.0	20.5	21.0	21.5	22.0	22.5	23.0	23.5	24.0	24.5	25.0	25.5	26.0	26.5	27.0	27.5	28.0	28.5	29.0	29.5
	Dew-point temperature (°C)																			
6.0	-25	-30	-40																	
6.5	-18	-21	-25	-30	-39															
7.0	-14	-16	-18	-21	-24	-29	-38													
7.5	-11	-12	-14	-16	-18	-21	-24	-28	-36											
8.0	-8	-9	-10	-12	-13	-15	-17	-20	-23	-28	-34	-56								
8.5	-5	-6	-8	-9	-10	-12	-13	-15	-17	-19	-22	-26	-32	-46						
9.0	-3	-4	-5	-6	-7	-8	-10	-11	-13	-14	-16	-19	-22	-25	-31	-41				
9.5	-2	-2	-3	-4	-5	-6	-7	-8	-9	-11	-12	-14	-16	-18	-21	-24	-29	-37		
10.0	0	-1	-1	-2	-3	-4	-5	-6	-7	-8	-9	-10	-12	-13	-15	-17	-20	-23	-27	-34
10.5	2	1	0	0	-1	-2	-3	-3	-4	-5	-6	-7	-9	-10	-11	-13	-14	-16	-19	-22
11.0	3	3	2	1	1	0	-1	-1	-2	-3	-4	-5	-6	-7	-8	-9	-11	-12	-14	-16
11.5	4	4	3	3	2	2	1	0	0	-1	-2	-3	-4	-4	-5	-6	-7	-9	-10	-11
12.0	6	5	5	4	4	3	2	2	1	1	0	-1	-2	-2	-3	-4	-5	-6	-7	-8
12.5	7	6	6	5	5	4	4	3	3	2	2	1	0	0	-1	-2	-3	-4	-4	-5
13.0	8	8	7	7	6	6	5	5	4	4	3	3	2	1	1	0	-1	-1	-2	-3
13.5	9	9	8	8	7	7	6	6	6	5	5	4	3	3	2	2	1	0	0	-1
14.0	10	10	9	9	8	8	8	7	7	6	6	5	5	4	4	3	3	2	2	1
14.5	11	11	10	10	10	9	9	8	8	8	7	7	6	6	5	5	4	4	3	3
15.0	12	12	11	11	11	10	10	9	9	9	8	8	7	7	7	6	6	5	5	4
15.5	13	13	12	12	12	11	11	11	10	10	9	9	9	8	8	7	7	6	6	6
16.0	14	13	13	13	13	12	12	12	11	11	10	10	10	9	9	9	8	8	7	7
16.5	15	14	14	14	13	13	13	12	12	12	12	11	11	10	10	10	9	9	9	8
17.0	15	15	15	15	14	14	14	13	13	13	12	12	12	12	11	11	10	10	10	9
17.5	16	16	16	15	15	15	15	14	14	14	13	13	13	13	12	12	12	11	11	10
18.0	17	17	17	16	16	16	15	15	15	15	14	14	14	13	13	13	13	12	12	12
18.5	18	18	17	17	17	17	16	16	16	16	15	15	15	14	14	14	14	13	13	13
19.0	19	18	18	18	18	17	17	17	17	16	16	16	16	15	15	15	14	14	14	14
19.5	19	19	19	19	18	18	18	18	17	17	17	17	16	16	16	16	15	15	15	15
20.0	20	20	20	19	19	19	19	18	18	18	18	18	17	17	17	17	16	16	16	15
20.5		20	20	20	20	20	19	19	19	19	19	18	18	18	18	17	17	17	17	16
21.0			21	21	21	20	20	20	20	20	19	19	19	19	18	18	18	18	17	17
21.5				21	21	21	21	21	21	20	20	20	20	19	19	19	19	19	18	18
22.0					22	22	22	21	21	21	21	21	20	20	20	20	20	19	19	19
22.5						22	22	22	22	22	22	21	21	21	21	21	20	20	20	20
23.0							23	23	23	22	22	22	22	22	22	21	21	21	21	21
23.5								23	23	23	23	23	23	22	22	22	22	22	21	21
24.0									24	24	24	23	23	23	23	23	23	22	22	22
24.5										24	24	24	24	24	24	23	23	23	23	23
25.0											25	25	25	25	24	24	24	24	24	23
25.5												25	25	25	25	25	25	25	24	24
26.0													26	26	26	26	25	25	25	25
26.5														26	26	26	26	26	26	26
27.0															27	27	27	27	26	26
27.5																27	27	27	27	27
28.0																	28	28	28	28
28.5																		28	28	28
29.0																			29	29
29.5																				29

Table 2. Dew-point temperature table (ventilated thermometers) at an elevation of 306–760 m *concluded*

Wet-bulb temperature (°C)	Dry-bulb temperature (°C)																			
	30.0	30.5	31.0	31.5	32.0	32.5	33.0	33.5	34.0	34.5	35.0	35.5	36.0	36.5	37.0	37.5	38.0	38.5	39.0	39.5
	Dew-point temperature (°C)																			
10.5	-25	-31	-41																	
11.0	-18	-20	-24	-28	-36															
11.5	-13	-15	-17	-19	-22	-26	-32	-44												
12.0	-9	-11	-12	-14	-16	-18	-21	-24	-29	-36										
12.5	-6	-7	-9	-10	-11	-13	-15	-17	-19	-22	-26	-32	-44							
13.0	-4	-5	-6	-7	-8	-9	-11	-12	-14	-16	-18	-20	-24	-28	-35	-81				
13.5	-2	-3	-3	-4	-5	-6	-7	-8	-10	-11	-13	-14	-16	-19	-21	-25	-30	-40		
14.0	0	0	-1	-2	-3	-4	-5	-5	-7	-8	-9	-10	-12	-13	-15	-17	-19	-22	-27	-33
14.5	2	1	1	0	-1	-1	-2	-3	-4	-5	-6	-7	-8	-9	-10	-12	-14	-15	-18	-20
15.0	4	3	2	2	1	1	0	-1	-2	-2	-3	-4	-5	-6	-7	-8	-9	-11	-12	-14
15.5	5	5	4	3	3	2	2	1	0	0	-1	-2	-3	-3	-4	-5	-6	-7	-8	-10
16.0	6	6	5	5	4	4	3	3	2	2	1	0	0	-1	-2	-3	-3	-4	-5	-6
16.5	8	7	7	6	6	5	5	4	4	3	3	2	2	1	0	0	-1	-2	-3	-4
17.0	9	9	8	8	7	7	6	6	5	5	4	4	3	3	2	2	1	0	0	-1
17.5	10	10	9	9	9	8	8	7	7	6	6	5	5	4	4	3	3	2	2	1
18.0	11	11	10	10	10	9	9	9	8	8	7	7	6	6	5	5	4	4	3	3
18.5	12	12	12	11	11	11	10	10	9	9	9	8	8	7	7	7	6	6	5	5
19.0	13	13	13	12	12	12	11	11	11	10	10	10	9	9	8	8	7	7	7	6
19.5	14	14	14	13	13	13	12	12	12	11	11	11	10	10	10	9	9	8	8	8
20.0	15	15	15	14	14	14	13	13	13	13	12	12	12	11	11	10	10	10	9	9
20.5	16	16	16	15	15	15	14	14	14	14	13	13	13	12	12	12	11	11	11	10
21.0	17	17	16	16	16	16	15	15	15	15	14	14	14	13	13	13	12	12	12	11
21.5	18	18	17	17	17	17	16	16	16	16	15	15	15	14	14	14	14	13	13	13
22.0	19	18	18	18	18	18	17	17	17	17	16	16	16	15	15	15	15	14	14	14
22.5	20	19	19	19	19	18	18	18	18	17	17	17	17	16	16	16	16	15	15	15
23.0	20	20	20	20	19	19	19	19	19	18	18	18	18	17	17	17	17	16	16	16
23.5	21	21	21	20	20	20	20	20	19	19	19	19	19	18	18	18	18	17	17	17
24.0	22	22	21	21	21	21	21	20	20	20	20	20	19	19	19	19	18	18	18	18
24.5	23	22	22	22	22	22	21	21	21	21	21	20	20	20	20	20	19	19	19	19
25.0	23	23	23	23	23	22	22	22	22	22	21	21	21	21	21	20	20	20	20	20
25.5	24	24	24	24	23	23	23	23	23	22	22	22	22	22	21	21	21	21	21	20
26.0	25	25	24	24	24	24	24	24	23	23	23	23	23	22	22	22	22	22	22	21
26.5	25	25	25	25	25	25	24	24	24	24	24	24	23	23	23	23	23	23	22	22
27.0	26	26	26	26	25	25	25	25	25	25	25	24	24	24	24	24	23	23	23	23
27.5	27	27	26	26	26	26	26	26	26	25	25	25	25	25	25	24	24	24	24	24
28.0	27	27	27	27	27	27	27	26	26	26	26	26	26	25	25	25	25	25	25	25
28.5	28	28	28	28	28	27	27	27	27	27	27	27	26	26	26	26	26	26	25	25
29.0	29	29	28	28	28	28	28	28	28	27	27	27	27	27	27	27	26	26	26	26
29.5	29	29	29	29	29	29	29	28	28	28	28	28	28	28	27	27	27	27	27	27
30.0	30	30	30	30	29	29	29	29	29	29	29	29	28	28	28	28	28	28	28	27
30.5		30	30	30	30	30	30	30	30	29	29	29	29	29	29	29	29	28	28	28
31.0			31	31	31	31	31	30	30	30	30	30	30	30	30	29	29	29	29	29
31.5				31	31	31	31	31	31	31	31	31	30	30	30	30	30	30	30	30
32.0					32	32	32	32	32	31	31	31	31	31	31	31	31	30	30	30
32.5						32	32	32	32	32	32	32	32	32	31	31	31	31	31	31
33.0							33	33	33	33	33	32	32	32	32	32	32	32	32	32
33.5								33	33	33	33	33	33	33	33	33	33	32	32	32
34.0									34	34	34	34	34	33	33	33	33	33	33	33
34.5										34	34	34	34	34	34	34	34	34	34	33
35.0											35	35	35	35	35	35	34	34	34	34
35.5												35	35	35	35	35	35	35	35	35
36.0													36	36	36	36	36	36	35	35
36.5														36	36	36	36	36	36	36
37.0															37	37	37	37	37	37
37.5																37	37	37	37	37
38.0																	38	38	38	38
38.5																		38	38	38
39.0																			39	39
39.5																				39

Table 3. Dew-point temperature table (ventilated thermometers) at an elevation of ≥761 m

Wet-bulb temperature (°C)	Dry-bulb temperature (°C)																			
	0.0	0.5	1.0	1.5	2.0	2.5	3.0	3.5	4.0	4.5	5.0	5.5	6.0	6.5	7.0	7.5	8.0	8.5	9.0	9.5
	Dew-point temperature (°C)																			
-6.0	-27	-32	-42																	
-5.5	-22	-25	-29	-35	-51															
-5.0	-18	-20	-23	-26	-31	-38														
-4.5	-15	-17	-19	-21	-24	-27	-32	-42												
-4.0	-12	-14	-15	-17	-19	-22	-25	-29	-34	-48										
-3.5	-10	-12	-13	-14	-16	-18	-20	-22	-25	-30	-37	-62								
-3.0	-8	-9	-11	-12	-13	-15	-16	-18	-20	-23	-26	-31	-39							
-2.5	-7	-8	-9	-10	-11	-12	-13	-15	-17	-19	-21	-24	-27	-32	-41					
-2.0	-5	-6	-7	-8	-9	-10	-11	-12	-14	-15	-17	-19	-21	-24	-28	-33	-44			
-1.5	-4	-4	-5	-6	-7	-8	-9	-10	-11	-12	-14	-15	-17	-19	-22	-24	-28	-34	-47	
-1.0	-2	-3	-4	-5	-5	-6	-7	-8	-9	-10	-11	-13	-14	-16	-17	-19	-22	-25	-29	-35
-0.5	-1	-2	-2	-3	-4	-5	-5	-6	-7	-8	-9	-10	-11	-13	-14	-16	-17	-19	-22	-25
0.0	0	-1	-1	-2	-3	-4	-4	-5	-6	-7	-8	-10	-11	-12	-14	-16	-18	-20	-23	-27
0.5		0	0	-1	-1	-2	-3	-4	-5	-6	-7	-8	-9	-10	-11	-13	-14	-16	-18	-21
1.0			1	0	0	-1	-2	-2	-3	-4	-5	-6	-7	-8	-9	-10	-11	-13	-15	-16
1.5				1	1	0	0	-1	-2	-2	-3	-4	-5	-6	-7	-8	-9	-10	-12	-13
2.0					2	1	1	0	0	-1	-2	-3	-3	-4	-5	-6	-7	-8	-9	-10
2.5						2	2	1	1	0	-1	-1	-2	-3	-3	-4	-5	-6	-7	-8
3.0							3	2	2	1	1	0	-1	-1	-2	-3	-4	-4	-5	-6
3.5								3	3	2	2	1	1	0	-1	-1	-2	-3	-4	-4
4.0									4	3	3	2	2	1	1	0	-1	-1	-2	-3
4.5										4	4	3	3	2	2	1	1	0	-1	-1
5.0											5	5	4	4	3	2	2	1	1	0
5.5												5	5	5	4	4	3	3	2	1
6.0													6	6	5	5	4	4	3	3
6.5														6	6	6	5	5	4	4
7.0															7	7	6	6	5	5
7.5																7	7	7	6	6
8.0																	8	8	7	7
8.5																		8	8	8
9.0																			9	9
9.5																				9

Example:

Temperature (°C)		Dew-point temperature (°C)
Dry-bulb	Wet-bulb	
9.5	4.0	-3
19.5	12.0	7
29.0	14.5	4

Note: During freezing weather the water on the wick must be completely frozen before a reading is attempted; ensure that ice has formed on the wick if wet-bulb temperature is below 0°C.

This table is not to be used with nonventilated psychrometers that rely on natural air movement for ventilation.

Table 3. Dew-point temperature table (ventilated thermometers) at an elevation of ≥761 m *continued*

Wet-bulb temperature (°C)	Dry-bulb temperature (°C)																			
	10.0	10.5	11.0	11.5	12.0	12.5	13.0	13.5	14.0	14.5	15.0	15.5	16.0	16.5	17.0	17.5	18.0	18.5	19.0	19.5
	Dew-point temperature (°C)																			
0.5	-24	-28	-35	-55																
1.0	-19	-21	-25	-29	-36															
1.5	-15	-17	-19	-22	-25	-30	-38													
2.0	-12	-13	-15	-17	-19	-22	-26	-31	-40											
2.5	-9	-11	-12	-14	-15	-17	-20	-22	-26	-31	-42									
3.0	-7	-8	-9	-11	-12	-14	-15	-17	-20	-23	-26	-32	-43							
3.5	-5	-6	-7	-8	-9	-11	-12	-14	-15	-17	-20	-23	-27	-32	-44					
4.0	-4	-4	5	-6	-7	-8	-9	-11	-12	-14	-16	-18	-20	-23	-27	-32	-45			
4.5	-2	-3	-4	-4	-5	-6	-7	-8	-9	-11	-12	-14	-15	-18	-20	-23	-27	-32	-44	
5.0	-1	-1	-2	-3	-4	-4	-5	-6	-7	-8	-9	-11	-12	-14	-15	-17	-20	-23	-26	-32
5.5	1	0	-1	-1	-2	-3	-3	-4	-5	-6	-7	-8	-9	-11	-12	-14	-15	-17	-20	-22
6.0	2	1	1	0	0	-1	-2	-3	-3	-4	-5	-6	-7	-8	-9	-10	-12	-13	-15	-17
6.5	3	3	2	2	1	0	0	-1	-2	-2	-3	-4	-5	-6	-7	-8	-9	-10	-12	-13
7.0	4	4	3	3	2	2	1	0	0	-1	-2	-2	-3	-4	-5	-6	-7	-8	-9	-10
7.5	5	5	4	4	3	3	2	2	1	1	0	-1	-1	-2	-3	-4	-5	-5	-6	-7
8.0	6	6	5	5	5	4	4	3	2	2	1	1	0	-1	-1	-2	-3	-4	-4	-5
8.5	7	7	6	6	6	5	5	4	4	3	3	2	1	1	0	0	-1	-2	-3	-3
9.0	8	8	7	7	7	6	6	5	5	4	4	3	3	2	2	1	0	0	-1	-2
9.5	9	9	8	8	8	7	7	6	6	5	5	5	4	4	3	2	2	1	1	0
10.0	10	10	9	9	9	8	8	7	7	7	6	6	5	5	4	4	3	3	2	2
10.5		10	10	10	9	9	9	8	8	8	7	7	6	6	5	5	4	4	3	3
11.0			11	11	10	10	10	9	9	9	8	8	7	7	7	6	6	5	5	4
11.5				11	11	11	11	10	10	9	9	9	8	8	8	7	7	6	6	5
12.0					12	12	11	11	11	10	10	10	9	9	9	8	8	7	7	7
12.5						12	12	12	12	11	11	11	10	10	10	9	9	8	8	8
13.0							13	13	12	12	12	11	11	11	10	10	10	9	9	9
13.5								13	13	13	13	12	12	12	11	11	11	10	10	10
14.0									14	14	13	13	13	13	12	12	12	11	11	11
14.5										14	14	14	14	13	13	13	13	12	12	12
15.0											15	15	14	14	14	14	13	13	13	12
15.5												15	15	15	15	14	14	14	14	13
16.0													16	16	16	15	15	15	14	14
16.5														16	16	16	16	16	15	15
17.0															17	17	17	16	16	16
17.5																17	17	17	17	17
18.0																	18	18	18	17
18.5																		18	18	18
19.0																			19	19
19.5																				19

Table 3. Dew-point temperature table (ventilated thermometers) at an elevation of ≥761 m *continued*

Wet-bulb temperature (°C)	Dry-bulb temperature (°C)																			
	20.0	20.5	21.0	21.5	22.0	22.5	23.0	23.5	24.0	24.5	25.0	25.5	26.0	26.5	27.0	27.5	28.0	28.5	29.0	29.5
	Dew-point temperature (°C)																			
6.0	-19	-22	-26	-31	-40															
6.5	-15	-17	-19	-22	-25	-30	-38													
7.0	-11	-13	-14	-16	-18	-21	-24	-29	-36											
7.5	-9	-10	-11	-12	-14	-16	-18	-20	-24	-28	-34	-51								
8.0	-6	-7	-8	-9	-11	-12	-14	-15	-17	-20	-23	-26	-32	-43						
8.5	-4	-5	-6	-7	-8	-9	-10	-12	-13	-15	-17	-19	-22	-25	-30	-39				
9.0	-2	-3	-4	-5	-6	-7	-8	-9	-10	-11	-13	-14	-16	-18	-21	-24	-28	-35	-57	
9.5	-1	-1	-2	-3	-4	-4	-5	-6	-7	-8	-9	-11	-12	-14	-15	-17	-20	-23	-26	-32
10.0	1	0	0	-1	-2	-2	-3	-4	-5	-6	-7	-8	-9	-10	-11	-13	-15	-17	-19	-21
10.5	2	2	1	1	0	-1	-1	-2	-3	-4	-4	-5	-6	-7	-8	-10	-11	-12	-14	-16
11.0	4	3	3	2	2	1	0	0	-1	-2	-2	-3	-4	-5	-6	-7	-8	-9	-10	-12
11.5	5	4	4	3	3	2	2	1	1	0	-1	-1	-2	-3	-4	-4	-5	-6	-7	-8
12.0	6	6	5	5	4	4	3	3	2	2	1	0	0	-1	-2	-2	-3	-4	-5	-6
12.5	7	7	6	6	6	5	5	4	4	3	3	2	1	1	0	0	-1	-2	-3	-3
13.0	8	8	8	7	7	6	6	5	5	4	4	3	3	2	2	1	1	0	-1	-1
13.5	9	9	9	8	8	7	7	7	6	6	5	5	4	4	3	3	2	2	1	0
14.0	10	10	10	9	9	9	8	8	7	7	7	6	6	5	5	4	4	3	3	2
14.5	11	11	11	10	10	10	9	9	8	8	8	7	7	6	6	6	5	5	4	4
15.0	12	12	12	11	11	11	10	10	10	9	9	8	8	8	7	7	6	6	6	5
15.5	13	13	12	12	12	12	11	11	11	10	10	10	9	9	8	8	8	7	7	6
16.0	14	14	13	13	13	12	12	12	12	11	11	11	10	10	10	9	9	8	8	8
16.5	15	14	14	14	14	13	13	13	12	12	12	12	11	11	11	10	10	10	9	9
17.0	16	15	15	15	15	14	14	14	13	13	13	13	12	12	12	11	11	11	10	10
17.5	16	16	16	16	15	15	15	15	14	14	14	13	13	13	13	12	12	12	11	11
18.0	17	17	17	16	16	16	16	15	15	15	15	14	14	14	14	13	13	13	12	12
18.5	18	18	17	17	17	17	16	16	16	16	15	15	15	15	14	14	14	14	13	13
19.0	19	18	18	18	18	17	17	17	17	17	16	16	16	16	15	15	15	15	14	14
19.5	19	19	19	19	18	18	18	18	18	17	17	17	17	16	16	16	16	15	15	15
20.0	20	20	20	19	19	19	19	19	18	18	18	18	17	17	17	17	17	16	16	16
20.5		20	20	20	20	20	20	19	19	19	19	18	18	18	18	18	17	17	17	17
21.0			21	21	21	20	20	20	20	20	19	19	19	19	19	18	18	18	18	18
21.5				21	21	21	21	21	21	20	20	20	20	20	19	19	19	19	19	18
22.0					22	22	22	21	21	21	21	21	21	20	20	20	20	20	19	19
22.5						22	22	22	22	22	22	21	21	21	21	21	20	20	20	20
23.0							23	23	23	22	22	22	22	22	22	21	21	21	21	21
23.5								23	23	23	23	23	23	22	22	22	22	22	22	21
24.0									24	24	24	24	23	23	23	23	23	23	22	22
24.5										24	24	24	24	24	24	24	23	23	23	23
25.0											25	25	25	25	24	24	24	24	24	24
25.5												25	25	25	25	25	25	25	24	24
26.0													26	26	26	26	25	25	25	25
26.5														26	26	26	26	26	26	26
27.0															27	27	27	27	26	26
27.5																27	27	27	27	27
28.0																	28	28	28	28
28.5																		28	28	28
29.0																			29	29
29.5																				29

Table 3. Dew-point temperature table (ventilated thermometers) at an elevation of ≥761 m *concluded*

Wet-bulb temperature (°C)	Dry-bulb temperature (°C)																			
	30.0	30.5	31.0	31.5	32.0	32.5	33.0	33.5	34.0	34.5	35.0	35.5	36.0	36.5	37.0	37.5	38.0	38.5	39.0	39.5
	Dew-point temperature (°C)																			
10.5	-18	-20	-23	-27	-33	-46														
11.0	-13	-15	-17	-19	-22	-25	-30	-38												
11.5	-10	-11	-12	-14	-16	-18	-20	-23	-27	-33	-45									
12.0	-7	-8	-9	-10	-11	-13	-14	-16	-19	-21	-24	-29	-36							
12.5	-4	-5	-6	-7	-8	-9	-10	-12	-13	-15	-17	-19	-22	-26	-31	-41				
13.0	-2	-3	-4	-4	-5	-6	-7	-8	-10	-11	-12	-14	-16	-18	-20	-23	-27	-33	-47	
13.5	0	-1	-2	-2	-3	-4	-5	-6	-7	-8	-9	-10	-11	-13	-14	-16	-18	-21	-24	-29
14.0	2	1	0	0	-1	-2	-2	-3	-4	-5	-6	-7	-8	-9	-10	-12	-13	-15	-17	-19
14.5	3	3	2	1	1	0	0	-1	-2	-3	-3	-4	-5	-6	-7	-8	-9	-10	-12	-13
15.0	5	4	4	3	3	2	1	1	0	-1	-1	-2	-3	-3	-4	-5	-6	-7	-8	-9
15.5	6	5	5	5	4	4	3	2	2	1	1	0	-1	-1	-2	-3	-3	-4	-5	-6
16.0	7	7	6	6	5	5	5	4	4	3	2	2	1	1	0	-1	-1	-2	-3	-3
16.5	8	8	8	7	7	6	6	6	5	5	4	4	3	3	2	1	1	0	-1	-1
17.0	10	9	9	8	8	8	7	7	6	6	6	5	5	4	4	3	3	2	1	1
17.5	11	10	10	10	9	9	9	8	8	7	7	7	6	6	5	5	4	4	3	3
18.0	12	11	11	11	10	10	10	9	9	9	8	8	7	7	7	6	6	5	5	4
18.5	13	12	12	12	11	11	11	11	10	10	9	9	9	8	8	8	7	7	6	6
19.0	14	13	13	13	13	12	12	12	11	11	11	10	10	10	9	9	8	8	8	7
19.5	15	14	14	14	14	13	13	13	12	12	12	11	11	11	10	10	10	9	9	9
20.0	16	15	15	15	15	14	14	14	13	13	13	13	12	12	12	11	11	11	10	10
20.5	16	16	16	16	15	15	15	15	14	14	14	14	13	13	13	12	12	12	11	11
21.0	17	17	17	17	16	16	16	16	15	15	15	15	14	14	14	13	13	13	13	12
21.5	18	18	18	17	17	17	17	17	16	16	16	16	15	15	15	14	14	14	14	13
22.0	19	19	18	18	18	18	18	17	17	17	17	16	16	16	16	15	15	15	15	14
22.5	20	20	19	19	19	19	18	18	18	18	18	17	17	17	17	16	16	16	16	15
23.0	20	20	20	20	20	19	19	19	19	19	18	18	18	18	18	17	17	17	17	16
23.5	21	21	21	21	20	20	20	20	20	19	19	19	19	19	18	18	18	18	18	17
24.0	22	22	22	21	21	21	21	21	21	20	20	20	20	20	19	19	19	19	18	18
24.5	23	23	22	22	22	22	22	21	21	21	21	21	21	20	20	20	20	20	19	19
25.0	23	23	23	23	23	23	22	22	22	22	22	22	21	21	21	21	21	20	20	20
25.5	24	24	24	24	23	23	23	23	23	23	22	22	22	22	22	22	21	21	21	21
26.0	25	25	25	24	24	24	24	24	24	23	23	23	23	23	23	22	22	22	22	22
26.5	25	25	25	25	25	25	25	24	24	24	24	24	24	23	23	23	23	23	23	22
27.0	26	26	26	26	26	25	25	25	25	25	25	25	24	24	24	24	24	24	23	23
27.5	27	27	27	26	26	26	26	26	26	26	25	25	25	25	25	25	24	24	24	24
28.0	27	27	27	27	27	27	27	27	26	26	26	26	26	26	26	25	25	25	25	25
28.5	28	28	28	28	28	27	27	27	27	27	27	27	27	26	26	26	26	26	26	25
29.0	29	29	28	28	28	28	28	28	28	28	27	27	27	27	27	27	27	27	26	26
29.5	29	29	29	29	29	29	29	29	28	28	28	28	28	28	28	27	27	27	27	27
30.0	30	30	30	30	30	29	29	29	29	29	29	29	29	28	28	28	28	28	28	28
30.5		30	30	30	30	30	30	30	30	30	29	29	29	29	29	29	29	29	28	28
31.0			31	31	31	31	31	30	30	30	30	30	30	30	30	29	29	29	29	29
31.5				31	31	31	31	31	31	31	31	31	30	30	30	30	30	30	30	30
32.0					32	32	32	32	32	31	31	31	31	31	31	31	31	31	30	30
32.5						32	32	32	32	32	32	32	32	32	31	31	31	31	31	31
33.0							33	33	33	33	33	32	32	32	32	32	32	32	32	32
33.5								33	33	33	33	33	33	33	33	33	33	32	32	32
34.0									34	34	34	34	34	34	33	33	33	33	33	33
34.5										34	34	34	34	34	34	34	34	34	34	34
35.0											35	35	35	35	35	35	34	34	34	34
35.5												35	35	35	35	35	35	35	35	35
36.0													36	36	36	36	36	36	35	35
36.5														36	36	36	36	36	36	36
37.0															37	37	37	37	37	37
37.5																37	37	37	37	37
38.0																	38	38	38	38
38.5																		38	38	38
39.0																			39	39
39.5																				39